

Note: This is a reference cited in AP 42, *Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources*. AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

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FEB 11 1983

ENTROPY
ENVIRONMENTALISTS, INC.
WILMINGTON REGIONAL OFFICE
DEM

SPECIALISTS IN AIR POLLUTION MEASUREMENT & MANAGEMENT

STATIONARY SOURCE SAMPLING REPORT

This Report was Reviewed

by: [Signature]

Date: 12/21/93

and found to be

Satisfactory:

Unsatisfactory:

Remarks: [Signature]
KOCH SULFUR PRODUCTS, INC.

WILMINGTON, NORTH CAROLINA

SULFUR OXIDES EMISSIONS COMPLIANCE TESTING

UNIT #1 STACK

RECEIVED
FEB 12 1983

FEB 12 1983

PERMITS & COMPLIANCE
JANUARY 26, 1983

P.O. Box 12291, Research Triangle Park, North Carolina 27709
Phone 919-781-3550

DIVISION OF ENVIRONMENTAL MANAGEMENT
Air Quality Section

December 21, 1983

M E M O R A N D U M

TO: Chuck Wakild

ATTN: Wayne Cook

FROM: Jule Shanklin 

SUBJECT: SOURCE TEST REPORT REVIEW
Koch Sulfur Products, Inc.
SULFURIC ACID PLANTS 1&2
Wilmington, NC (Pender Co.)

REF: (A) NCAC 2D .0517
(B) "A New Approach to Production Rate Measurement
in Sulfuric Acid Plants",
Pollution Engineering, Nov '83, pp. 38 & 57
(C) NC DEM Air Permit 1853R5

The subject reports for the 1/26&27/83 tests performed by Entropy Environmentalists have been reviewed and found acceptable. Note that the Testor analyzed the H₂SO₄ and SO₃ components from the front half separately; therefore, I have combined those two results as shown in the summary to more closely represent results obtained by "standard" Method 3 recoveries. As shown in the summary, marginal compliance was demonstrated for the 2 plants. As an additional check, I calculated emissions using techniques explained in Reference (B) and got identical values (to 2 decimal places).

Unit-Date	Production T/hr	Emissions		Limit lb/T (Ref.A)	
		Pollutant	lb/hr		lb/T
1- 1/26/83 (5.65 T/hr rating)	4.7	SO ₂	126.9	26.95(24.5)*	27
		H ₂ SO ₄	0.577	0.122	0.5
		H ₂ SO ₄ +SO ₃	0.592	0.1253	0.5
2- 1/27/83 (3.75 T/hr)	3.125	SO ₂	80.36	25.72(24.5)*	27
		H ₂ SO ₄	0.13	0.042	0.5
		H ₂ SO ₄ +SO ₃	0.158	0.051	0.5

*As figured by "S-factor" Method (Ref. B)

/la

cc: Dennis Ramsey

DIVISION OF ENVIRONMENTAL MANAGEMENT

February 21, 1983

MEMORANDUM

TO: Michael Y. Aldridge
FROM: Arthur Smoot *AFS*
SUBJECT: Koch Sulfur Products, Acid
 #1 Acid Plant Source Test
 Premise #00118
 New Hanover County

Enclosed is the report on the stack test performed on Koch #1 Acid (Sulfuric) Plant January 26, 1983 and related AQ-16 and AQ-92. Please review and transmit your findings and conclusions to the Wilmington Regional Field Office.

cfp

Enclosure

cc: Wilmington Regional Office
 Central Files

DISTRIBUTION

Yellow Copy - Mon. Mgt./Central Files
Blue Copy - Regional Office
(Optional) White Copy - Permits
Enforcement
Stack Test

NORTH CAROLINA DIVISION OF ENVIRONMENTAL MANAGEMENT
AIR QUALITY REPORT

REQUEST FOR ACTION TO BE TAKEN

The item listed below requires action to ascertain compliance under Article 21, Chapter 143 of the General Statutes of North Carolina, concerning rules and regulations governing the control of air pollution:

Name	Address	County
Koch Sulfur	US 421 N. Wilmington	New Hanover
Subject		

Investigation Requested By	Address	County
Source test, A1(a) source inspection Koch Sulfur		
Remarks		

Assigned To	Date
Wilmington Regional Office	2/16/83
Investigated By	Date
Arthur Smoot	1/26/83
Action Recommended	Returned
	2/18/83

Inspect by schedule
Investigation Report

Contacted Bill Edd of Koch Sulfur and Willis Nesbit of Entropy Environmentalist, Inc. Plant #1 was tested 1/26/83. Twelve minutes before the end of run #2 an impinger bottle broke and the run (labeled 2A) was voided. During the intervals between runs, a source inspection was made of the acid plants and the control equipment consisting of two (2) mist eliminators, listed in permit #1853R5 were operating as required.

Correspondence To: _____

Signature: *Arthur Smoot*

SOURCE TEST
OBSERVERS CHECKLIST

N. C. Division of Environmental Management

Source Name: <u>Koch Sulfur</u>	Testing Firm: <u>Entropy Environmental, Inc</u>
Address: _____	Address: <u>P.O. Box 12291</u>
Plant Location: <u>US 421, N</u>	Phone: <u>N.C. 27709 ph 781-3556</u>
Source Contact: <u>Bill Edd</u>	Test Engineer: <u>Willis Nesbit</u>
Phone: _____	Assistant: <u>Steve Turle</u>

Other Personnel Involved

Affiliation

Process Description: H₂SO₄ manufacture, plant #1

Process Rate During Test: 100 tons/day
 Maximum Process Rate: 100 tons/day
 Burner Sizes (Incinerators) Pri: _____ Sec: _____

TEST PARAMETERS

Duct Size: 41.75"
 Distance Before Ports: 15'
 Distance After Ports: 15'
 Number of Test Points: 36
 Number of Runs: 3
 Sampling Time Per Run (min.): 72 min

Pollutant Sampled: SO₂, H₂SO₄
 E. P. A. Method No.: 8
 If method differs from E. P. A. method, explain: _____

For Method 5 sampling train record ΔH_0 _____

	Run #1	Run #2	Run #3
Leakage Rate (ft ³ /min.) (0.02 ft ³ /min. or less)	<u>0:00</u>	<u>0:00</u>	<u>0:00</u>
Time Started	<u>8:12</u>	<u>12:00</u>	<u>13:53</u>
Time Ended	<u>9:26</u>	<u>13:17</u>	<u>15:10</u>
Test Date(s)	<u>1/26/83</u>	<u>1/26/83</u>	_____

See Graph on Reverse Side
 For Number of Test Points.
 Use Reverse Side for Comments.

Request 2 Copies of Report

Willis Nesbit
 OBSERVERS SIGNATURE

REPORT CERTIFICATION

The sampling and analysis performed for this report was carried out under my direction and supervision.

Date February 3, 1983

Signature

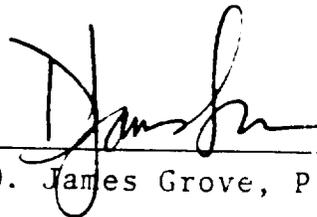


Willis S. Nesbit

I have reviewed all testing details and results in this test report and hereby certify that the test report is authentic and accurate.

Date February 3, 1983

Signature



D. James Grove, P. E.

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INTRODUCTION

Stationary source sampling was performed for Koch Sulfur Products in Wilmington, North Carolina on January 26, 1983. Three Method 8 runs were performed to determine the sulfur oxides emissions from the Unit #1 stack. Bill Edd and John Bremner of Koch Sulfur Products coordinated the testing program between the plant and Entropy. Arthur Smoot of the North Carolina Department of Natural Resources and Community Development was present to observe the testing.

Immediately following is the "Summary of Results" section which presents the test results; for detailed results of each run, refer to Appendix A. A description of the source and an air flow schematic appear in the "Process Description and Operation" section. The final section, "Sampling and Analytical Procedures", briefly describes the sampling strategy used. For a detailed description of the equipment and procedures, refer to Appendix D. Pertinent calibration data is presented in Appendix E.

SUMMARY OF RESULTS

Table 1 summarizes the results of the three EPA Method 8 runs performed on January 26, 1983 at the Unit #1 stack. Individual run summaries are presented in Table 2 and in Appendix A.

Prior to sampling, the flue gas stream was checked for the presence of cyclonic flow; the average yaw angle was found to be less than ten degrees and thus the location was found to be acceptable.

During the testing program, zero percent moisture was assumed for calculation purposes as allowed by the method for sampling in "essentially dry streams".

TABLE 1
SULFUR OXIDES EMISSIONS SUMMARY
(pounds per ton)

Pollutant -----	Run 1 ---	Run 2 ---	Run 3 ---	Average -----
H ₂ SO ₄	0.076	0.138	0.153	0.122
SO ₂	25.41	27.04	28.41	26.95
SO ₃	0.0014	0.0015	0.0070	0.0033

TABLE 2

PARTICULATE & SULFUR DIOXIDE TESTS SUMMARY OF RESULTS

#1 Stack

	1	2	3
RUN DATE	01/26/83	01/26/83	01/26/83
TEST TRAIN PARAMETERS:			
VOLUME OF DRY GAS SAMPLED, SCF*	57.100	60.210	63.587
PERCENT ISOKINETIC	96.6	95.1	95.4
STACK PARAMETERS:			
TEMPERATURE, DEG. F	158	168	170
AIR FLOW RATES SCFM*, DRY	5,760	6,174	6,575
ACFM, WET	6,729	7,328	7,830
METHOD 8, SULFURIC ACID RESULTS:			
CATCH, MILLIGRAMS	27.0	47.9	52.3
PPM BY VOL., DRY	4.10	6.90	7.13
LBS PER HOUR	0.36	0.65	0.72
METHOD 8, SULFUR DIOXIDE RESULTS:			
CATCH, MILLIGRAMS	8,965.1	9,385.6	9,779.2
PPM BY VOL., DRY	2,083.9	2,068.9	2,041.2
LBS PER HOUR	119.63	127.31	133.76
METHOD 8, SULFUR TRIOXIDE RESULTS:			
CATCH, MILLIGRAMS	0.5	0.4	2.4
PPM BY VOL., DRY	0.093	0.071	0.401
LBS PER HOUR	0.0067	0.0054	0.0328

*68 Deg. F - 29.92 in. Hg.